

Cache problems

- 1- Assume you have a cache memory with total size 128 kbytes. Each line will contain a block of 8 bytes. How many lines are there in this cache? Draw a sketch that shows the structure of this cache.
- 2- If you have a RAM with total size 64 M of words of a byte size. Determine the number of words in this RAM, the address size. Draw a sketch that shows the structure of this RAM.
- 3- If the two memories (cache and RAM) are used in the same system, determine the number of caches that the RAM can hold.
- 4- If you are using the direct mapping, how many RAM blocks competing on each cache line?
- 5- If you are using the associative mapping, how many RAM blocks competing on each cache line?
- 6- If you are using the set associative mapping, with set=4 lines, how many RAM blocks competing on each cache line/set?
- 7- The replacement algorithm FIFO is used to replace the cache blocks when it is filled. Which cache mapping type is suitable for this algorithm? Describe how it could be applied to our problem.